USSR/Nuclear Physics - Cosmic Rays 21 May 51

"Masses of Cosmic-Ray Particles," S. Azimov, M. Birger, N. Dobrotin, G. Zhdanov, Yu. Kokurin, S. Slavatinskiy, Phys Inst imeni Lebedev, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXVIII, No 3, pp 447-450

Authors' data shows that μ- and π-mesons are not predominant. Particles of mass intermediate between π-meson and proton and with lifetime over 10^{-8} sec occur at 3-4 km altitudes; they do not exceed 10% of observed protons. These results differ from those of Alikhanyan and Alikhanov. Authors were assisted by advice of Acad D. V. Skobeltsyn, V. I. Veksler,

186T98

USSR/Nuclear Physics - Cosmic Rays 21 May 51
(Contd)

Corr Mem, Acad Sci USSR, Prof S. N. Vernov, Prof E. L. Feynberg, and G. T. Zatsepin. App used was built with assistance of A. G. Novikov, A. A. Malinkin, V. M. Polynov, and G. I. Sergeyev. Submitted by D. V. Skobeltsyn.

186T98

AZIMOV, S.

ASTIA

Vol. 17 no 10

2287 THE NATURE OF PENETRATING PARTICLES OF ELECTRON-NUCLEAR SHOWERS IO Prirode Proniknyushchikh Chastits Elektronno-Yadernykh Livneĭ, S. A. Azimov, N. G. Birger, V. N. Pelimov, and Others; DOKLADI AKADEMIIA NAUK (USSR) July '52 (65-2 hrog.); pp 287-290; 2 illus, 2 tb, eq. The nature of penetrating particles formed in electron-nuclear showers is explained. Experiments show that the penetrating particles of showers contain also protons and mesons and that the protons constitute a larger part of the penetrating component of electron-nuclear showers. Due to the improved testing apparatus and increase in accuracy in measuring small deviations of particle tracks in the magnetic field, it became possible to measure the impulses of particles up to values of ~ 3000 Mev/sec and to increase the accuracy in determining the mass values of rapid particles. Measurements show that among the penetrating particles of electron-nuclear showers with an impulse of less than $2 \cdot 10^9$ ev/sec the mesons constitute 30-50% and the protons 50-70%. The mass of the particles was determined by the curvature of their tracks observed in a Wilson chamber with the aid of a hodoscope.

AZIMOV, S. A.

PA 234187

USSR/Nuclear Physics - Meson Decay 1 Mar 52

"Electrons Formed During Decay of Fast Mesons," S. A. Azimov, V. F. Vishnevskiy, K. P. Ryzhkova, Phys-Tech Inst. Acad Sci Uzbek SSR

"Dok Ak Nauk SSSR" Vol 83, No 1, pp 55-58

Comparison of the theoretical value of the ratio of the number of decay electrons to the number of mesons (0.2 or 0.14) with the exptl value (8± 4%) points to the very good agreement of the exptl data with the assumption that the fast mesons transmit to decay electrons 1/3 of their energy and not 1/2, as thought earlier. Conclude that mesons do not decay into 2 but rather into 3 particles. Submitted 2 Jan 52 by Acad D. V. Skobel'tsyn. Acknowledge the helpful instructions of professors N. A. Dobrotin and V. I. Veksler.

234187

Characteristic properties of electronic showers. S. A. Azimov. *Trudy Fiz. Inst. Akad. Nauk Gruz. SSSR* 5, 43-81(1955); *Bull. Acad. Sci. U.S.S.R., Ph.*

Chem. Sci. 1955, 317-24(Engl. translation).—Electronic showers from cosmic radiations were studied by means of Wilson chamber photographs. On the basis of energy considerations, the decay of a meson is considered to be by a 3 particle process (1 electron and 2 neutrinos). Measurements at different elevations and with absorbers as well as magnetic fields show that the soft component of the cosmic radiation increases markedly with altitude and the penetrating radiations consist of protons and mesons.

Paul V. Peng

5

U S S R

537.591.3

5765. On the absorption and interaction of particles producing showers of nucleons and electrons. S. A. AZIMOV, N. A. DOBROTIN, A. L. LYUBIMOV, A. S. K. P. RYZHKOVA. *Izv. Akad. Nauk SSSR (Ser. Fiz.)* 17, *No.* 1, 80-7 (1953) *In Russian.*

The interaction and absorption free paths for the shower-producing particles have been measured for carbon, iron and lead using a hodoscoped counter set. The values found for the absorption mean free paths were 216 ± 15, 344 ± 25 and 482 ± 31 g cm^{-2} respectively. These results are discussed and it is concluded that they can only be explained by assuming that some plural production of mesons takes place. [Shortened version of Wataghin's summary (see Abstr. 5747 above) which contains 1 diagram.] H. HALPERN

1. AZIMOV, S.A.; LYUBIMOV, A.L.; RYZHKOVA, K.P.

2. USSR (600)

4. Collisions (Nuclear Physics)

7. Absorption of cosmic-ray particles, generating electrono-nuclear showers, S.A. Azimov, A.L. Liubimov, K.P. Ryzhkova, Dokl. AN SSSR 90 no. 1, 1953.

Exptl work was performed during summer of 1951 on Pamir (3860 meters) using various absorbing materials and coincidence counters. Results are tabulated. Absence of transition effect of density was noticed. Absorption by lead was found to be weaker than by graphite. Indebted to V.I.Veksler and N.A.Dobrotin.

259T76

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

Name: AZIMOV, Sadyk Azimovich

Dissertation: Study of electro-nuclear cascades and absorbtion of nuclear-active particles in the air and in dense absorbents of different atomic weight

Degree: Doc Phys-Math Sci

Affiliation: Inst of Nuclear Physics, Acad Sci Uzbek SSR

Defense Date, Place: 30 May 55, Council of Physical Inst imeni Lebedev, Acad Sci USSR

Certification Date: 15 Jun 57

Source: BMVO 16/57

AZIMOV, S.A.

Nature of decaying particles generating electron-nuclear showers in dense absorbers. Izv.AN Uz.SSR.Ser.fiz-mat.nauk no.1:3-10 '57. (MIRA 13:8)

(Particles (Nuclear physics))

AZIMOV, S.A

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1769
AUTHOR AZIMOV,S.A., GULJAMOV,U.G., ZAMČALOVA,E.A., NIZAMENDINOVA, M. PODGORECKIJ,M.I., JULDAŠEV,A.
TITLE The Investigation of σ-Stars Produced by Negative Pions.
PERIODICAL Žurn.eksp.i teor.fis,31,fasc.5,756-761 (1956)
Issued: 1 / 1957

These σ-stars were produced by negative pions which had come to a standstill in an emulsion chamber. This emulsion chamber consists of a large number of layers without carrier and permits the exact measuring of the energy of the secondary particles by determination of the range of ionization. The emulsion chamber used in this case consisted of 126 emulsion layers of 450 μ thickness each. The chamber was exposed in the stratosphere for a period of 7 hours. When looking through it was observed that light negative mesons got stuck, and those stars were selected which contained at least one secondary charged particle. Furthermore, the true length of the traces of all secondary particles was measured and, if necessary, followed from layer to layer. When looking through, in particular those σ-stars were investigated from the center of which traces of slow electrons could be followed. Such electrons are essentially connected with the mesoatomic stage of the capture of a negative pion, and they are usually created on the occasion of the capture of a negative pion by the heavy nuclei of the photo-emulsion (Ag and Br). The traces of the very slow electrons take the form of thickenings, and the σ-stars corresponding to them were brought into connection with the spallation of Ag- and Br-nuclei.

3

USSR

537.591.3

5766. On the decay particles producing showers of nucleons and electrons. S. A. AZIMOV AND V. F. VISHNEVSKII. *Izv. Akad. Nauk SSSR (Ser. Fiz.)* 17, No. 1, 88–91 (1953) *In Russian.*

Transitions for showers generated in water, and absorption mean free paths in water and in air, have been studied in a series of measurements at 3900 m and 950 m. For the latter, the following results were obtained: 223 ± 15 (water), 123 ± 6 g.cm^{-2} (air). The authors conclude that about one-third of shower-producing secondary particles decay in air (at average mountain altitudes). [Transcription of Wataghin's summary (see Abstr. 5747 above).]

Azimov, S.A.

Distr: 4B3d

1109

INVESTIGATION OF σ STARS INDUCED BY NEGATIVE π^- MESONS. S. A. Azimov, U. G. Gullamov, E. A. Zamchalova, M. Nizametdinova, M. I. Podgoretskii, and A. Tuldashev (Academy of Sciences, USSR and Academy of Sciences, Uzbek, SSR). Soviet Phys. JETP 4, 632-6(1957) June.

The properties of σ-stars produced by π^- mesons stopping in an emulsion chamber were investigated. Data obtained from the analysis of 938 σ-stars were used to determine the distribution of the number of prongs as well as the energy distribution of secondary particles. The obtained energy spectrum is compared to the data on σ-stars produced by K^--mesons. (auth)

1, RMY

AZIMOV, S.A.; GULYAMOV, U.G.; RAKHIMBAYEV, B.; USMANOVA, M.

Instances of hyperfragments with meson disintegration. Dokl. AN Uz. SSR no.9:13-18 '57. (MIRA 11:5)

1. Fiziko-tekhnicheskiy institut AN UzSSR. Predstavleno akademikom AN UzSSR U.A. Arifovym.
(Nuclear reactions) (Mesons--Decay)

AZIMOV, S.A.; YULDASHEV, A.A.

Study of energy-dependent absorption of nuclear active particles by a dense absorbent. Dokl. AN Uz. SSR no.1:11-14 '58.
(MIRA 11:5)

1.Fiziko-tekhnicheskiy institut AN UzSSR. Predstavleno akad. AN UzSSR U.A. Arifovym.
(Cosmic rays) (Particles, Elementary)

AZIMOV, S.A.; MASAGUTOV, V.S.; YUNUSOV, M.

Generating V^0 particles in complex nuclei. Izv. AN Uz. SSR. Ser. fiz.-mat.nauk no.4:13-22 '58. (MIRA 11:11)

1. Fiziko-tekhnicheskiy institut AN Uz. SSR.
(Nuclear physics)

AUTHOR: Azimov, S.A., Doctor of Physico-Mathematical Sciences, Deputy Director 25-58-4-11/41

TITLE: Nuclear Physics - To Serve the National Economy (Yadernuyu fiziku - narodnomu khozyaystvu)

PERIODICAL: Nauka i Zhizn', 1958, Nr 4, pp 23-25 (USSR)

ABSTRACT: Information is presented on the development of nuclear physics in the Uzbek SSSR. The Institut yadernoy fiziki (Institute of Nuclear Physics) of the Uzbek SSR Academy of Sciences was founded in 1957. It is equipped with such modern machines as an atomic reactor, a cyclotrone, fast neutron generators, etc. The institute is primarily interested in investigations of elementary particles; utilization of marked atoms in biology; medicine and technics; the application of isotopes and radiation in industry and agriculture. A device to detect joints in cables is now being designed on the basis of gamma-ray absorption and emission. A model of this device has been mounted on a continuous vulcanization machine in a Tashkent cable plant. Institute workers are designing an installation for the automatic grinding and sorting of ore in a two-stage cycle, to ensure optimum working processes of ball

Card 1/2

mills and classifiers. Marked atoms and radioactivity are being applied in the investigation of underground water dynamics, measurements of soil density, diffusion of salt solutions in porous material, etc., relating to the utilization of the golodnaya step' (Hunger Steppe). There are 3 photographs.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk UzSSR (The Institute of Nuclear Physics of the UzSSR Academy of Sciences)

AVAILABLE: Library of Congress

Card 2/2 1. Nuclear physics laboratories--Instrumentation

AZIMOV, S. A.

CONCERNING ABNORMAL CASES OF HYPERFRAGMENT DECAY

S. A. Azimov, U. Gulyamov, M. Podgoretsky, B. Rakhimbayev

Results of the investigation of hyperfragments using thick photoemulsions are presented. From a total of 60,000 observed stars containing more than 7-8 black and grey spurs, 9 cases of hyperfragment decay were detected. In two of these cases, abnormal decays with an ojection of a K-meson were observed.

If the K-meson is regarded as a decay product of a heavier hyperon than Ξ (distinct from the cascade hyperon, since it does not produce K-meson during decay), then it follows from the obtained decay schemes that the mass of these particles should be $\sim 3{,}000 m_e$.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959.

AZIMOV, S. A.

N-COMPONENT ABSORPTION IN A DENSE ABSORBER

S.A. Azimov, Yu.P. Krotenko, R. Karimov, L. Khavin, A. Yuldashev

The absorption of N-component in water was measured up to depths ranging from 10 to 12 m both for the soft and the penetrating shower component, as well as the absorption efficiency of the non-equilibrium soft electron component at large depths (3-10m). All the measurements show that the absorption coefficient of N-component in a dense absorber (λ/μ = 200 gms/cm²) is much higher than the absorption coefficient in the air (λ/μ = 120 gms/cm²). Such a value for the absorption coefficient in a dense absorber of 10 to 12 m may be explained by the production with 30% probability of decaying particles in a shower which carry away the bulk of the energy of the primary particle.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11, July 1959

AZI.OV, S. A.

CERENKOV COUNTER INVESTIGATION OF THE AVERAGE ENERGY FRACTION TRANSFERRED TO THE SOFT COMPONENT

S.A. Azimov, T. Yuldashbayev

This study consists in a Cerenkov counter investigation of the energy fraction transferred to the soft component.

The results obtained show that the average share of energy transferred to the soft component by primary particles with energies up to 10^{11} ev remains constant and then diminishes approximately to one third of its initial value in the energy range from 10^{11} to 5×10^{11} ev.

It should be noted that substantial fluctuations are observed in the energy transfer to the soft component, particularly for energies above 10^{11} ev.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11, July 1959

AZIMOV, S.A.

Energy carried by equilibrium electrons. Dokl. AN UzSSR no.2:11-14 '59. (MIRA 12:4)

1. Institut yadernoy fiziki AN UzSSR. Predstavleno akademikom AN UzSSR U.A. Arifovym.

(Cosmic rays)

AZIMOV, S.A.; KARIMOV, R.

Nonequilibrium soft component occuring on mountain tops. Dokl.AN Uz.SSR no.3:9-12 '59. (MIRA 12:7)

1. Fiziko-tekhnicheskiy institut AN UzSSR. Predstavleno akademikom AN UzSSR U.A.Arifovym.
(Mesons)

21(3) SOV/166-59-6-6/11

AUTHORS: Azimov, S.A., Yuldashbayev, T.S.

TITLE: Application of the Cherenkov Counters for the Investigation of an Electron - nuclear Shower

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 6, pp 47 - 51 (USSR)

ABSTRACT: The occurrence of the Cherenkov radiation [Ref 1,2,3] has already been applied occasionally in nuclear- and radiation physics for the construction of sensitive recorders - so-called Cherenkov counters or detectors, - e.g. for the investigation of μ -mesons [Ref 7], for the separation of protons and μ -mesons [Ref 8], for the measurement of the albedo of the cosmic radiation [Ref 9] etc. The authors describe the measurement of the densities of soft and penetrating components of electron - nuclear showers with high energy; the measurement was carried out by means of the Cherenkov recorders. The showers arising in a graphite detector of 25 cm thickness, were recorded by three series of hodoscopic counters. The Cherenkov recorders constructed by the

Card 1/2

Application of the Cherenkov Counters for the Investigation of an Electron - nuclear Shower SOV/166-59-6-6/11

authors consisted of containers with distilled water, at the opposite walls of which there was installed a photomultiplier. An iron layer of 7 cm lay between the counters. The upper Cherenkov counter situated under the graphite recorded the penetrating shower particles ; the lower one essentially recorded the electron component which attained its maximum in the iron layer. The block circuit diagram of the equipment is given. The obtained spectrum of density of the electron component is represented in a logarithmic scale. The measurements were carried out in the height of 3860 m.
There are 5 figures, and 11 references, 5 of which are Soviet, 3 English, and 3 American.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Uz SSR (Physico-Technical Institute AS Uz SSR)

SUBMITTED: October 6, 1959

Card 2/2

AZIMOV, S.A.; GULYAMOV, U.G.; RAKHIMBAYEV, B.G.

Two cases of the meson decay of hyperfragments. Dokl. AN Uz. SSR no.7:6-9 '59. (MIRA 12:10)

1.Fiziko-tekhnicheskiy institut AN UzSSR. Predstavleno akad. AN UzSSR S.V. Starodubtsevym.
(Mesons---Decay)

AZIMOV, S.A.; KRATENKO, Yu.P.; KNAVIN, L.S.

Measuring the absorption free path of nuclear active particles in water by means of ionization chambers. Dokl. AN Uz.SSR no.10: 14-16 '59 (MIRA 13:3)

1. Sredneaziatskiy gosuniversitet imeni V.I. Lenina. Predstavleno akademikom AN UzSSR S. V. Starodubtsovym.
(Particles, Elementary)

AZIMOV, S.A.; KALAYDZIDU, Ye.I.; KORDUB, N.V.; SLEPAKOVA, S.I.; USMANOV, Kh.U.

Determining the integral heat of wetting of natural silk irradiated with gamma rays. Dokl.AN Uz.SSR no.12:13-15 '59.
(MIRA 13:5)

1. Fiziko-tekhnicheskiy institut AN UzSSR. 2. Chlen-korrespondent AN UzSSR (for Usmanov).
(Silk) (Heat of wetting) (Gamma rays)

S/058/61/000/010/022/100
A001/A101

AUTHORS: Azimov, S.A., Yuldashbayev, T.S.

TITLE: Study of production of the soft component by means of Cherenkov counters

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 97, abstract 10B508 ("Tr. Mezhdunar. konferentsii po kosmich. lucham, 1959, v. 1", Moscow, AN SSSR, 1960, 198 - 203)

TEXT: The authors investigated production of the soft component by means of an equipment in which showers produced in a graphite absorber, 25-cm thick, were registered by three rows of hodoscopic counters and two Cherenkov counters. The histograms obtained indicate considerable fluctuations in transferring the energy into the soft component of electron-nuclear showers, especially for energies of primary particles $> 10^{11}$ ev. The mean fraction of energy transferred to the soft component in the energy range from 150 to 600 Bev amounts to $\sim 30\%$.

L. Dorman

[Abstracter's note: Complete translation]

Card 1/1

S/058/61/000/010/023/100
A001/A101

AUTHORS: Azimov, S.A., Kratenko, Yu.P., Khavin, L.S., Yuldashev, A.A., Karimov, R.

TITLE: On absorption of nuclear-active high-energy particles in air and dense absorber

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 97, abstract 10B509 ("Tr. Mezhdunar. konferentsii po kosmich. lucham, 1959, v. 1", Moscow, AN SSSR, 1960, 204 - 208)

TEXT: To investigate absorption of nuclear-active particles in the energy range 10^{10} - 10^{12} ev in air and a dense absorber, the authors employed a counter installation, an installation with ionization chambers and an installation with a telescope.

[Abstracter's note: Complete translation]

Card 1/1

24.2120
10.2000(A)

80239

S/166/60/000/02/08/013

AUTHORS: Avak'yants, G.M., Azimov, S.A., and Umarov, G.Ya.

TITLE: On the Motion of a Charged Particle in a Rarified Gas Being in a Magnetic Field

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1960, No.2, pp 68-77

TEXT: Starting from the classical equations of motion, the mean quadratic shift of a charged particle in a gas which is in a magnetic field is calculated by the authors with the aid of statical averaging. Let the direction of the magnetic field agree with the z-axis. Let $\omega_0 = \frac{eH}{mc}$, $s = \frac{1}{\tau} + i\omega_0$, τ - the time in which the particle runs through the free length of path, v_x, v_y, v_z - the components of velocity of the particle, $u = v_x + iv_y$, t - time, $\zeta = x+iy$, $\zeta_0 = x_0+iy_0$, (x_0, y_0, z_0) - initial position of the particle in the moment $t = 0$, (x,y,z) - position of the particle in the moment t, a^* - the magnitude conjugate-complex to a. Then

Card 1/2

On the Motion of a Charged Particle in a Rarified Gas Being in a Magnetic Field

80230

S/166/60/000/02/08/013

(24) $$\overline{|\xi-\xi_0|^2}=\frac{|\bar{u}|^2}{|s|^2}\left|(1-e^{-st})\right|^2+\overline{|F'|^2}\left\{\frac{t_0 t}{|s|^2}+\frac{e^{-(s+s^*)t}}{|s|^4}\left|(e^{st_0}-1)\right|^2\times\right.$$

$$\left.\times\frac{e^{(s+s^*)t}-1}{e^{(s+s^*)t_0}-1}-\frac{t_0}{ss^{*2}}e^{-s^*t}(e^{s^*t_0}-1)\frac{e^{s^*t}-1}{e^{s^*t_0}-1}-\frac{t_0}{s^*s^2}e^{-st}(e^{st_0}-1)\frac{e^{st}-1}{e^{st_0}-1}\right\},$$

where

(18) $$\overline{|F'|^2}=\overline{|u|^2}|s|^2\frac{e^{(s+s^*)t}-1}{|(e^{st_0}-1)|^2}.$$

From (24) the authors obtain simpler expressions for several special cases (e.g. $|s|t_0<<1$ or $|s|t>>1$). The effective coefficient of diffusion is calculated. The distribution of the diffusing particles with respect to velocities and coordinates is determined. There are 3 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Uz SSR (Physical-Technical Institute AS Uz SSR)

SUBMITTED: June 5, 1959

Card 2/2

Azimov S.A.

S/166/60/000/03/03/011
C111/C222

AUTHORS: Azimov, S.A., Corresponding Member of the AS Uz SSR, Chernov, G.M., and Chudakov, V.M.

TITLE: On the Investigation of the Angular Distribution of Shower Particles in Nuclear Interactions

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1960, No. 3, pp. 16 - 23

TEXT: The authors join the results of (Ref. 1,2,3). Let $c\beta_c$ be the velocity of the system of the mass center, $c\beta^*$ be the velocity of the particle in this reference system, let $m = \frac{\beta_c}{\beta^*}$. The paper contains a theoretical investigation of the angular distribution of the shower particles for different $m \neq 1$. It is assumed that there exists a reference system with a symmetrical angular distribution of the shower particles with respect to the angle $\theta^* = \frac{\pi}{2}$ (S - system). The system of the laboratory is called L - system.

Card 1/2

On the Investigation of the Angular Distribution of Shower Particles in Nuclear Interactions

S/166/60/000/03/03/011
C111/C222

It is stated that the deviation of the number m from the value 1 for not too large energies leads to an appearant asymmetry of the angular distribution with respect to the angle $\frac{\pi}{2}$ in an arbitrary reference system. At the other hand, here the anisotropy of the angular distribution in the S-system and the mean value $\overline{m}$ can be estimated if the weak dependence of the characteristics of the angular distribution of m in the domain of small angles θ in the L - system is used. Different methods for the estimation of $\overline{m}$ have to lead to the same results and simultaneously show whether $\overline{m} > 1$ or $\overline{m} < 1$. In the contrary case it can be concluded that there does not exist a reference system with an angular distribution symmetrical with respect to $\frac{\pi}{2}$. There are 5 figures and 7 references: 6 Soviet and 1 American.

ASSOCIATION: Fiziko-Tekhnicheskiy institut AN Uz SSR (Physical-Technical Institute AS Uz SSR)

SUBMITTED: February 2, 1960

Card 2/2

VB

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S/190/60/002/010/003/026
B004/B054

AUTHORS: Azimov, S. A., Usmanov, Kh. U., Kordub, N. V., and Slepakova, S. I.

TITLE: The Grafting of Some Monomers on Silk and Caprone by Means of Gamma Rays

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 10, pp. 1459-1462

TEXT: The authors report on the grafting of acrylonitrile and styrene on silk and caprone under irradiation with gamma rays of Co^{60} with an activity of 1350 curies. A preliminary irradiation of fibers and a subsequent treatment with the monomers showed no result. When irradiating in monomeric solution, however, a weight increase (6 - 23%) of the fiber was observed which depended on the solvent applied (Table). With acrylonitrile and silk, an aqueous solution showed the best effect (23% weight increase), since it well moistens the silk. The grafting of acrylonitrile on caprone was carried out in aqueous-alcoholic solution, the grafting of styrene on caprone in ethanol (23 - 24% weight increase). The optimum irradiation dose was found to be $1 \cdot 10^6$ physical roentgen equivalents for the process.

Card 1/2

The Grafting of Some Monomers on Silk and Caprone by Means of Gamma Rays

88535
S/190/60/002/010/003/026
B004/B054

A higher dose does not produce any further increase in weight of the fiber. The introduction of new chemical groups into the fibers was proved by means of an ИК-12 (IK-12) infrared recording spectrometer (Figs. 1, 2). The grafted silk and caprone showed the characteristic 2270 cm^{-1} band of the C≡N bond. On the basis of the change in viscosity of fibroin in copper-ammonia solution due to irradiation (Fig. 3) and the increase in moistening heat (Fig. 4), the authors assume a rupture of the principal chain of fibroin and a reduction in the packing of the macromolecules. The absorption bands corresponding to the hydrogen bonds of the CO-NH groups (3080 and 3300 cm^{-1}), however, remain unchanged even after intensive irradiation (Fig. 5). There are 5 figures, 1 table, and 3 references: 2 Soviet and 1 US.

ASSOCIATION: Fiziko-tekhnicheskiy institut (Institute of Physics and Technology). Institut khimii polimerov AN UzSSR (Institute of the Chemistry of Polymers of the AS Uzbekskaya SSR)

SUBMITTED: January 8, 1960

Card 2/2

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S/056/60/038/03/05/033
B006/B014

AUTHORS: Azimov, S. A., Gulyamov, U. G., Karimova, R., Rakhimbayev, B. G.

TITLE: Anomalous Decays of Hyperfragments //

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 3, pp. 697-702

TEXT: In recent years particles have been detected in the decay of hyperfragments the masses of which corresponded to the K-meson mass within the limits of error. The authors subjected one emulsion chamber to cosmic radiation in the stratosphere, while another was bombarded with $4.5 \cdot 10^9$-ev pions; three such decay events were recorded, one of them already described in Ref. 4 and the others in the article under review. The two cases under consideration were found in the pion-bombarded chamber which contained emulsions of the type Ilford G-5. Altogether, 60,000 stars with $N_h \geq 8$ were recorded. Case 1: Fig. 1 shows a microphotograph. The primary star was of the type 18 + 2π, the particle F departing from it (path length of 101μ)

Card 1/3

Anomalous Decays of Hyperfragments

S/056/60/038/03/05/033
B006/B014

decayed into two particles the charges of which were (8 ± 2) e. The ranges of these particles (1 and 2) were $(61 \pm 0.4)\mu$ and $(9362 \pm 122)\mu$, the angle between them was $83^{\circ}50' \pm 1^{\circ}20'$. Track 1 was attributed to an α-particle, and the mass of particle 2 was investigated by using two methods, i.e., the range-scattering method and the range-ionization method. The masses found by these methods were the following: $(856 \pm 167)m_e$ and $(990 \pm 120)\ m_e$. Assuming that particle 2 be a K-meson it would have an energy of (38.3 ± 0.3) Mev and a momentum of (197.6 ± 1.4)Mev/c. The decay modes of the F-particle are considered to be the most likely ones:
$C_6^{14} \rightarrow He_2^3 + K^- + n + B_5^{10}$ and $O_8^{18} \rightarrow He_2^3 + K^- + n + N_7^{14}$. Case 2: The primary star was of the type 19 + 3π; a particle F departed from it which, after having attained 28μ, decayed into the charged particles 1 and 2. The F-track has two breaks; the tracks 1 and 2 had a range of $(465 \pm 8)\mu$ and $(13640 \pm 170)\mu$, the angle between them was $141^{\circ} \pm 1^{\circ}30'$. The mass of particle 2 was determined by 4 different methods, and the following masses were obtained: $(801 \pm 143)m_e$ by grain counting, $(1170 \pm 120)m_e$ from the density of breaks, $(986 \pm 132)m_e$ - by the method of constant deviations, and $(764 \pm 170)m_e$ - by

4

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Anomalous Decays of Hyperfragments

S/056/60/038/03/05/033
B006/B014

the method of the "constant cell". The following decay mode is considered probable: $H^4_1 \rightarrow He^3_2 + K^- + n + Q$. The individual methods are discussed. In order to find out whether the deviations of the measured mass values of the proton mass (in measurements by the range-scattering and the range-ionization methods) are interrelated, the mass distributions were studied. Fig. 3 shows the particle mass distribution measured by the $[\overline{\langle\theta\rangle}, R]$ method for particles whose masses are larger than the proton mass, as determined by the $[\overline{\varepsilon}, R]$ method; Fig. 4 represents the distribution for particles whose masses are smaller than the proton mass. Agreement is adequate to permit the assumption that there is no correlation between the deviations of multiple scattering and ionization. The probability that the proton mass and the K-meson mass coincide by chance is lower than 0.5% with an error of 400 m_e. Data obtained by the above authors is compared in a table with that published in Refs. 1-5. Finally, the authors thank M. I. Podgoretskiy for his interest and advice. There are 4 figures, 1 table, and 11 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Uzbekskoy SSR (Institute of Physics and Technology of the Academy of Sciences, Uzbekskaya SSR)

SUBMITTED: August 24, 1959

Card 3/3

88424

23.5000

S/056/60/039/006/009/063
B006/B056

AUTHORS: Azimov, S. A., Teshabayev, K. T., Chernova, L. P., Chernov, G. M., Chudakov, V. M.

TITLE: Angular Distribution of Shower Particles in Nuclear Interactions Between Fast Nucleons and Heavy Nuclei of Photographic Emulsions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 6(12), pp. 1534-1539

TEXT: The angular distributions of secondary particles were investigated in 70 interaction events of singly-charged or neutral cosmic particles with heavy photoemulsion nuclei. These showers were found during the evaluation of Ilford-G-5 plates, which had been exposed in the stratosphere in 1955, in the course of the Italian expedition. 55 of them had been caused by singly-charged, and 15 by neutral particles. The energies of the primary particles could be determined as amounting to $10^{10} - 10^{12}$ ev; the showers consisted of more than eight strongly ionizing particles. Symmetry investigations of the angular distributions led to the result that symmetry

Card 1/4

Angular Distribution of Shower Particles in Nuclear Interactions Between Fast Nucleons and Heavy Nuclei of Photographic Emulsions

88424
S/056/60/039/006/009/063
B006/B056

exists with respect to the angle $\pi/2$ in a system of reference, in which for half of all particles $\theta^* > \pi/2$ (s-system); the conversion of θ measured in the laboratory system is carried out according to the equation $\gamma_c \tan \theta = \tan(\theta^*/2)$, where γ_c is the Lorentz factor. γ_c is determined from $(\gamma_c)_1 = \cot \theta_{1/2}$ and $\log (\gamma_c)_2 = \overline{-\log \tan \theta}$, $\gamma_c = \bar{\gamma}_c = \frac{1}{2}\left[(\gamma_c)_1 + (\gamma_c)_2\right]$. Fig. 1 shows the angular distribution in the s-system for secondary shower particles, caused by charged particles a) for $\gamma_c < 3$ (31 showers of 55), and b) for $\gamma_c > 3$. Further, the dispersions for the angular distributions were investigated along with the interrelation between γ_c and the number of the relativistic tracks n_s. ($n_s \geq 5$). The mean anisotropy of the angular distribution of the particles in the c-system may quantitatively be characterized by:

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Angular Distribution of Shower Particles in Nuclear Interactions Between Fast Nucleons and Heavy Nuclei of Photographic Emulsions

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B006/B056

$$\sigma = \left[\sum_{i=1}^{N} \sum_{j=1}^{n_i} \left[\log \tan \theta_{ij} - \overline{(\log \tan \theta)_i} \right]^2 \Big/ \sum_{i=1}^{N} (n_i - 1) \right]^{1/2},$$

where n_i is the number of charged secondary particles in the i-th shower with $\theta < \pi/2$, N is the number of showers, σ is between 0.44 and 0.55.
The authors thank G. B. Zhdanov for discussions. Zh. S. Takibayev is mentioned. There are 4 figures, 1 table, and 8 references: 5 Soviet, 2 US, and 1 Italian

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Uzbekskoy SSR (Institute of Physics and Technology of the Academy of Sciences of the Uzbekskaya SSR). Sredneaziatskiy gosudarstvennyy universitet ((Soviet) Central Asia State University)

SUBMITTED: June 27, 1960

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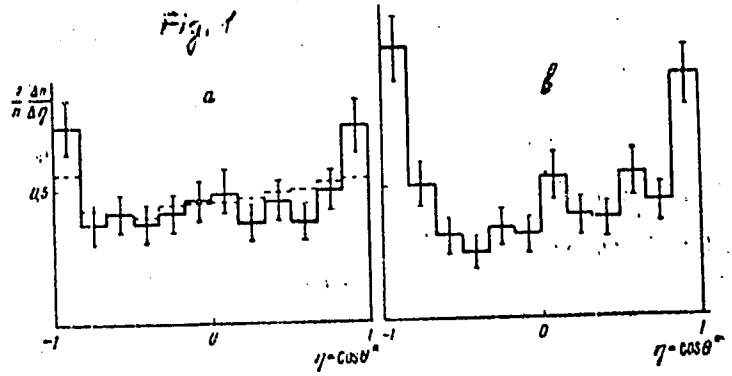
88424

S/056/60/039/006/009/063
B006/B056

Fig. 1



Text to Fig. 1: a) $\gamma_c < 3$; b) $\gamma_c > 3$; n - total number of secondary partides.

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AZIMOV, S.A.; DO IN SEB; KIRILLOVA, L.F.; KHABIBULLINA, E.N.; TSYGANOV, E.N.; SHAFRANOVA, M.G.; SHAKHBAZYAN, B.A.; YULDASHEV, A.A.

[Elastic p-p scattering at an energy of 2.8 Bev] Uprugoe rasseianie protona na protone pri energii 2,8 Bev. Dubna, Ob"edinennyi institut iadernykh issledovanii, 1961. 11 p. (MIRA 14:11)

1. Fiziko-tekhnicheskiy institut AN Uzbekskoy SSR (for Azimov, Khabibullina).

(Protons--Scattering)

33093
S/638/61/001/000/016/056
B101/B102

24.6700

AUTHORS: Azimov, S. A., Gulyamov, U. G., Karimova, R., Rakhimbayev, B. G.

TITLE: Study of excited fragments

SOURCE: Tashkentskaye konferentsiya po mirnomy ispol'zovaniyu atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent, 1961, 126-128

TEXT: The study of an Ilford G-5 emulsion pile irradiated with $4.5 \cdot 10^9$-ev pions revealed two cases of decay of an excited fragment among 60,000 stars with $N_h \geq 8$. The particle mass was in one case comparable to the K-meson. The particles were stopped in the emulsion without secondary reactions. Case 1: The particle F leaving the primary $(18 + 2_\pi)$-type star decays after 101μ with emission of two equally charged particles (1 and 2) which are stopped in the emulsion after $(61 \pm 0.4)\mu$ and $(9362 \pm 122)\mu$. If it is assumed that track 1 is to be attributed to an

Card 1/3

Study of excited fragments

α-particle, 11.1±0.1 Mev is found for the energy, and 250±1 Mev/sec for the momentum. The mass of particle 2 was determined by scattering and ionization The following relations were found: $M(I,R) = (856\pm167)m_e$, $M(\langle\alpha\rangle,R) = (990\pm120)m_e$. The energy of particle 2 taken as the K-meson is found to be (38.3±0.3)Mev, and (197.6±0.8)Mev/sec is found for its momentum. No recoil track of the nuclear residue was observed. Hence, the most probable reactions are as follows: $*C_6^{14} \rightarrow He_2^3 + K^- + n + B_5^{10}$; or $*O_8^{18} \rightarrow He_2^3 + K^- + n + N_7^{14}$. Case 2. A particle F, leaving the primary star 9 + 3_π, decays after 28μ into two equally charged (e=2) particles. The track width of F is that of singly-charged particles (proton or pion). Particle 1 is stopped in the emulsion after 465±8μ, and particle 2 after 13640±170μ. The following relations were obtained by different methods from the mass of particle 2: $M(I,\langle\alpha\rangle) = (801\pm143)m_e$; $M(I,R) = (1170\pm120)m_e$; $M(\langle\alpha\rangle,R) = (986\pm132)m_e$; $M(\langle\alpha\rangle,R) = (764\pm170)m_e$ The comparison between

Card 2/3

Study of excited fragments

the charges of F and particle 1 yielded the mass numbers $A_F = 3$ or 4, $A_1 = 3$ or 4. The significant residual momentum of the particles 1 and 2 is bound to be compensated by an uncharged particle. As a result, $A_F = 4$, and $A_1 = 3$. Then, the sum of momenta of 1 and 2 is (294.5±4.5)Mev/sec, and decay takes place according to the reaction: $*H_1^4 \rightarrow He_2^3 + K^- + n + Q$. The total energy liberation, if the neutral particle is assumed to be a neutron, is (110.4±1.6)Mev (regardless of the proper mass of the K-meson). There are 1 figure and 4 references: 1 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: Freier P., Lofgren E. J., Oppenheimer E. P., Ney E. P., Phys. Rev., 74, 1818, 1948; Ritson D. M., Phys. Rev., 91, 1572, 1953.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR
(Physicotechnical Institute of the AS Uzbekskaya SSR)

Card 3/3

AZIMOV, S.A.; ARUSHANOV, G.G.; ZAYNUTDINOV, Kh.; KARIMOV, R.; MASAGUTOV, V.S.; ESTERLIS, M.Kh.

Scattering of μ-mesons in lead in the pulse range (1 ÷ 5) Bev/c. Izv. AN Uz.SSR. Ser. fiz.-mat. nauk 3:61-67 '61. (MIRA 14:8)

1. Fiziko-tekhnicheskiy institut AN UzSSR. 2. Chlen-korrespondent AN UzSSR (for Azimov).

(Mesons--Scattering)

AZIMOV, S.A.; GULYAMOV, U.G.; RAKHIMBAYEV, B.G.

Binding energy of Λ^0-particles in hyperfragments. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk no.4:70-77 '61. (MIRA 14:9)

1. Fiziko-tekhnicheskiy institut AN UzSSR. Chlen-korrespondent AN UzSSR (for Azimov).

(Hyperfragments)

AZIMOV, S.A.; GULYAMOV, U.G.

Indirect decay of Λ° hyperfragments. Izv. AN Uz. SSR. Ser. fiz.-mat.nauk no.5:65-89 '61. (MIRA 14:10)

1. Fiziko-tekhnicheskiy institut AN Uz.SSR. 2. Chlen-korrespondent AN Uz.SSR (for Azimov).
(Hyperfragments)
(Particles(Nuclear physics))

31067
S/166/61/000/006/008/010
B102/B138

24.6700 (also 1191)

AUTHORS: Azimov, S. A., Corresponding Member AS Uzbekskaya SSR, Nikishin, B. K., Chernova, L. P., Chernov, G. M., Chudakov, V. M.

TITLE: Investigation of the azimuthal angular distribution of shower particles

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 6, 1961, 65-76

TEXT: This is a continuation of previous studies, covering: investigation of the influence of energy and momentum conservation law on the azimuthal characteristics of secondary particles; study of azimuthal effects in the collision of singly charged cosmic particles with heavy emulsion nuclei ($n_h+n_g>8$) and in pN collisions of 9-Bev primary particles; comparison between theory and experiment. The influence of momentum conservation was studied by evaluating experimental data on random stars imitating the 9-Bev pp collisions of statistical theory. The characteristic parameters of the azimuthal angular distributions were found to be below the values

Card 1/3

Investigation of the azimuthal ...

expected for isotropic. The effect of energy and momentum conservation decreases with increasing number of shower particles. Data from nuclear emulsions exposed to 9-Bev protons at the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research) were used to study the azimuthal effects in pN collisions. Most of the "jets" formed in the emulsion by single charged cosmic particles were pN collisions and displayed an azimuthal anisotropy of the secondary particles. The angular distribution was less disturbed by azimuthal effects than was isotropy. An azimuthal effect was found to be also present in collisions between singly charged cosmic particles and heavy emulsion nuclei ($n_h+n_g > 8$), but it was weaker than in "jets". This is due to the number of nucleons in the target nucleus. The azimuthal anisotropy of secondary particles is in contradiction with the hydrodynamic theory of "jet" formation but agrees with the results of the two-center model. Conservation of angular momentum has also to be taken into account. Some conclusions of the two-center model are discussed. Azimuthal anisotropy indicates the presence of high angular momentum of the excited centers, which can be assumed to be rotating spheres. There are 1 figure, 4 tables, and 21 references:

Card 2/3

Investigation of the azimuthal . . .

13 Soviet and 8 non-Soviet. The reference to the English-language publication reads as follows: W. L. Kraushaar, L. J. Marks, Phys. Rev. 93, 326, 1954.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physico-technical Institute of AS Uzbekskaya SSR)

SUBMITTED: April 7, 1961

Card 3/3

L 10072-63 EWT(m)/BDS--AFFTC/ASD

ACCESSION NR: AR3000344 S/0058/63/000/004/A033/A033

54

SOURCE: RZh. Fizika, Abs. 4A205

AUTHOR: Azimov, S. A.; Abdullayev, R. S.; Kratenko, Yu. P.; Polyak, Yu. V.

TITLE: Multichannel pulse-height analyzer to operate with a large number of ionization chambers

CITED SOURCE: Dokl. AN UzSSR, no. 8, 1961, 13-17

TOPIC TAGS: Pulse height analyzer, ionization hodoscope, optical recording

TRANSLATION: A multichannel pulse height analyzer is described, intended to operate with a large number of ionization chambers and permitting simultaneous ionization measurements to be made with each. The analyzer consists of a large number of independent sections of identical construction, the number of which is equal to the number of ionization chambers. Each section is a separate pulse height analyzer, consisting of a preamplifier, a main amplifier, amplitude-time converter, and a coincidence circuit. The voltage pulses from the ionization

Card 1/2

L 10077-63
ACCESSION NR: AR3000344 0

chamber are amplified and fed to the amplitude-time converter. The square pulse from the converter is fed through a neon lamp, which ignites during the time of action of this pulse. Neon lamps from all the sections of the analyzer are located on the common standard post of the hodoscopic apparatus type GK-5. At the instant of arrival of the master pulse, the lens of a motion picture camera is uncovered and the film begins to be drawn uniformly with the aid of a synchronous motor. The tracks of the glowing neon lamps and time markers are photographed on the film. The length of the track of the glowing neon lamp on the motion picture film makes it possible to determine the magnitude of the pulse from the corresponding ionization chamber. In practice, the capacity of the registration system (the number of analyzer sections) is determined by the resolution of the photographic equipment and can be raised to a value of several hundred.

DATE ACQ: 14May63 ENCL: 00 SUB CODE: PH

lm/ja
Card 2/2

AZIMOV, S.A.; ARUSHANOV, G.G.; ZAYNUTDINOV, Kh.; KARIMOV, R.; MASAGUTOV, V.S.; ESTERLIS, M.Kh.

Scattering of 1 - 5 bev/c μ-mesons in lead. Zhur.eksp.i teor.fiz. 41 no.1:56-59 Jl '61. (MIRA 14:7)

1. Fiziko-tekhnicheskiy institut AN Uzbekskoy SSR.
(Mesons—Scattering) (Cloud chamber)

AZIMOV, S.A.; NIKISHIN, B.K.; CHERNOVA, L.P.; CHERNOV, G.M.; CHUDAKOV, V.M.

Azimuthal angular distribution of atmospheric shower particles.
Izv. AN Uz. SSR. Ser. fiz.-mat. nauk no.6:65-76 '61.
(MIRA 16:12)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
2. Chlen-korrespondent AN UzSSR (for Azimov).

S/844/62/000/000/083/129
D423/D307

AUTHORS: Azimov, S. A., Kordub, N. V., Slepakova, S. I. and Usmanov, Kh. U.

TITLE: The study of grafted copolymers of natural silk and caprone obtained by means of γ irradiation

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 490-496

TEXT: Acrylonitrile, styrene and methylmethacrylate were grafted to silk and caprone whilst subjected to γ irradiation from a 1350 curie Co^{60} source. Optimum radiation dosages were found to be 1×10^6 r for acrylonitrile and 5×10^6 r for styrene and methylmethacrylate, and the extent of grafting was found to depend on the concentration of monomer in the solvent. The nitrogen content of the grafted silk was somewhat reduced with increasing dosage. Analysis of the grafted copolymers was difficult because of their insolubi-

Card 1/2

lity in cuprammonium solution and other solvents. It was established that the wetting properties of the grafted polymers were better than those of the original fibers. Other properties investigated showed that the grafted copolymers are insoluble in the usual solvents and that the copolymer of silk and acrylonitrile is dyed better with vat dyestuffs. The integral heats of wetting are considerably reduced and the resistance to breakage of the fibers is increased. Evidence was found for the introduction into the macromolecule of silk of hydrophobic groups. Acrylonitrile and styrene grafted to a crepe-de-chine material produced a tougher and heavier fabric, unchanged in external appearances. There are 4 figures and 4 tables.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzbSSR (Physico-Technical Institute, AS UzSSR)

24.6700

38393
S/166/62/000/002/007/008
B112/B104

AUTHORS: Azimov, S. A., Arushanov, G. G., Yuldashev, A. A.

TITLE: High energy proton-proton scattering

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 2, 1962, 76-81

TEXT: The authors reach the following conclusion: The general quantum-mechanical scattering theory for identical particles shows that the experimental data for p-p scattering at energies of 3 and 8.5 Bev can be sufficiently explained if purely imaginary amplitudes of the elastic p-p scattering are admitted. There are 2 figures and 2 tables.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physicotechnical Institute AS UzSSR)

SUBMITTED: August 29, 1961

Card 1/1

S/166/62/000/004/006/010
B112/B186

AUTHORS: Azimov, S. A., Chernova, L. P., Chernov, G. M., Chudakov, V. M.

TITLE: The nature of the interaction between fast nucleons and heavy nuclei

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 4, 1962, 47 - 51

TEXT: The authors studied experimentally the angular distribution (S-system) of secondary particles in showers produced by charged particles. They observed growth properties of the anisotropy σ which are qualitatively inconsistent with theoretical representations of the interaction between a nucleon and the flight-path "tube" of nuclear matter. If, however, the model of peripheral interactions is applied to rearrangement collisions of fast nucleons with heavy nuclei the increase of anisotropy in the S-system can be explained as due to an increased number of nucleus-target nucleons participating in the collision, as well as to the formation of a great number of ionized particles and the appearance of humps in shower particles. There is 1 figure.
Card 1/2

The nature of the interaction...

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physico-technical Institute AS UzSSR)

SUBMITTED: April 25, 1961

Card 2/2

94.6700

37545
S/048/62/026/005/009/022
B108/B104

AUTHORS: Azimov, S. A., Abdullayev, A. M., Myalkovskiy, V. M., and Yuldashbayev, T. S.

TITLE: Dependence of the mean energy portion transferred to π^0-mesons on the primary-particle energy in the range 10^{11}-10^{12} ev

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 5, 1962, 613-617

TEXT: The dependence of the coefficient of inelasticity on the primary-particle energy in the range of 10^{11}-10^{12} ev was studied with an arrangement of Cherenkov and hodoscope counters and Grigorov's "calorimetric method" (Tr. Mezhdunarodnoy konferentsii po kosmicheskim lucham, v. 1, Izd. AN SSSR, M., 1960). The amount of energy transferred to π^0-mesons in the first interaction process was determined from measurements of the number of relativistic particles in the electron-photon shower under the lead shield. The measurements were made with counter II (Fig. 1). The coefficient of inelasticity varies considerably. Its mean value at $> 10^{11}$ ev is

Card 1/6

17 ± 1.5 %. A correction by about 20 % had to be taken into account because of secondary interaction. Counter I was used to estimate the multiplicity of the secondary particles, which was found to increase slightly with E_0. About half of the particles recorded by counter I are electrons and positrons which appear as a result of the conversion of some of the gammas caused by the π^0-mesons. There are 4 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk UzSSR (Physico-technical Institute of the Academy of Sciences Uzbekskaya SSR)

Fig. 1. Schematic diagram of apparatus.

Legend: I - VII Cherenkov counters; Γ_1 - Γ_4 hodoscope.

45422

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S/058/63/000/001/047/120
A160/A101

AUTHORS: Azimov, S. A., Abdullayev, R. S., Kochetkov, O. A., Kratenko, Yu. P., Polyak, Yu. V., Pryakhin, Ye. A.

TITLE: The interaction of nucleoactive particles with an energy of $\geq 2 \cdot 10^{11}$ ev - with lead nuclei

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 33, abstract 1V220 ("Dokl. AN UzSSR", no. 1, 1962, 9 - 13, summary in Uzbek)

TEXT: An investigation was carried out of the interaction of nucleoactive particles with an energy of more than $2 \cdot 10^{11}$ ev with lead nuclei at a height of 3160 m above sea level with the help of an installation consisting of hodoscopic counters and ten rows of ionization pulse chambers between which absorber layers were placed. It was established that the mean value of the coefficient K_{π^0} which characterizes the part of the energy transmitted to the π^0-mesons by the nucleoactive particles during the collision equals $\bar{K}_{\pi^0} = 0.31 \pm 0.02$. An analysis carried out of the effect of the avalanches resulting from the secondary interactions revealed that the secondary interactions do not contribute an essential error in

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the determination of the individual values $K_{\pi}o$. The distribution of the number of the cases $N (> K_{\pi}o)$, integrated over $K_{\pi}o$, was also obtained for $K_{\pi}o \geq 0.1$. It was found that the number of the cases with an energy transmission to πo-mesons in the region $K_{\pi} > 0.2$ is subjected to the law $N (> K_{\pi}o) \sim \ln K_{\pi}o$. For the differential distribution in $K_{\pi}o$, this corresponds to the relation $N \sim 1/K_{\pi}o$.

V. Oushavin

[Abstracter's note: Complete translation]

Card 2/2

S/058/63/000/001/042/120
A062/A101

AUTHORS: Azimov, S. A., Yuldashev, A.A.

TITLE: Elastic proton-proton scattering at 10 BeV energy

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 40, abstract 1B286 ("Dokl. AN UzSSR", 1962, no. 6, 21 - 25; summary in Uzbek)

TEXT: From 82 cases of elastic proton-proton scattering, recorded in a nuclear emulsion irradiated in the synchrophasotron of Dubna at an energy of 10 Bev, the angular dependence of the differential cross-section is deduced. The interaction radius and the absorption coefficient in the optical proton model are calculated. Making use of data of other authors, the minimum interaction radius of the proton is evaluated for energies from 2.24 to 24 BeV.

[Abstracter's note: Complete translation]

Card 1/1

AZIMOV, S.A.; ARUSHANOV, G.G.; YULDASHEV, A.A.

High-energy proton-proton scattering. Izv. AN Uz. SSSR. Ser. fiz. mat.nauk 6 no.2:76-81 '62. (MIRA 15:9)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
(Protons--Scattering)

AZIMOV, S.A.; CHERNOVA, L.P.; CHERNOV, G.M.; CHUDAKOV, V.M.

Nature of the interaction between fast nucleons and heavy nuclei. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 6 no.4:47-51 '62. (MIRA 15:9)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
(Nuclear reactions)

S/056/62/042/002/020/055
B108/B104

AUTHORS: Azimov, S. A., To Ying Hsiehb, Kirilleva, L. F., Khabibullina, E. M., Tsyganov, E. N., Shafranova, M. G., Shakhbazyan, B. A., Yuldashev, A. A.

TITLE: Elastic proton-proton scattering at 2.8 Bev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 2, 1962, 430 - 434

TEXT: Elastic scattering of 2.8-Bev protons from the OIYal (see Association entry) proton synchrotron from protons was studied with the aid of 400μ thick НИКФИ-БР(NIKFI-BR) photoemulsions. 492 elastic scattering events were recorded. The differential cross section for elastic scattering in the range between 2.5 and 20.5° was 10 - 10.2 mb. The experimental data do not agree with the assumption on small spin interaction and small real part of the phase shifts. It was assumed that the singlet and the triplet nuclear force potentials are different: $V_s = -(u + iw)e^{-\beta^2 r^2}$, $V_t = \kappa V_s$. The calculations made with both the M matrix and the optical model considering

Card 1/2

Elastic proton-proton scattering...

Coulomb interaction showed that different total cross sections have to be allowed for in the singlet and triplet states. The mean square proton proton interaction radius is 1.06 ± 0.10 f. With $K<1$, the following results for the potential were found to satisfy the experimental data: $K = 0.18 \pm 0.04$, $u = 4.1 \pm 42.8$ Mev, $w = 333.4 \pm 112.8$ Mev. The authors thank V. I. Veksler for discussions and I. N. Silin for his work at the M-20(M-20) electronic computer. There are 2 figures, 1 table, and 8 references: 3 Soviet and 5 non-Soviet. The four most recent references to English-language publications read as follows: M. J. Longo et al. Phys. Rev. Lett., 2, 568, 1959; W. M. Preston et al. Phys. Rev., 118, 579, 1960; G. Smith et al. Proc. 1960 Ann. Intern. conf. of high energy physics at Rochester, Publ. Univ. Rochester, 1961, p. 203; B. Cork et al. Phys. Rev., 107, 856, 1957.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Fiziko-tekhnicheskiy institut Akademii nauk Uzbekskoy SSR (Physicotechnical Institute of the Academy of Sciences Uzbekskaya SSR)

SUBMITTED: September 26, 1961

Card 2/2

AZIMOV, S. A.; ABDULLAYEV, A. M.; MYALKOVSKIY, A.M.; YULDASHBAYEV, T. S.; POLYAK, Yu. V.

Investigation of Inelasticity of Interactions of Cosmic Ray Particles with Fe and C Nuclei in 1011 1012ev Energy Region.

Report submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP) Jaipur, India, 2-14 Dec 1963.

ACCESSION NO: AP4013022 S/0166/63/000/006/0035/0039

AUTHORS: Azimov, S. A.; Karimova, R.; Lozhkin, O. V.

TITLE: Angular correlation of fragments and light particles in nuclear splitting

SOURCE: AN UzSSR. Izv. Seriya fiziko-matematicheskikh nauk, no. 6, 1963, 35-39

TOPIC TAGS: nuclear splitting, nuclear fragment, nuclear emulsion, angular correlation

ABSTRACT: A study was made of the experimental angular correlation of the products of nuclear splitting in which compound particles (fragments) are formed. Such correlation of protons and alpha-particles with fragments is a consequence of several hypothesized mechanisms of the fragmentation process. An earlier study, using 660 Mev and 9 Gamma ev protons interacting with Ag and Br nuclei, gave uncertain results. In this work, nuclear emulsions of the type P-9ch were irradiated by 660 Mev protons in the phasotron LYaP-OIYaI. The observed angular distribution of fragments, protons, and alpha-particles with respect to the direction of the incident protons is compared with Monte Carlo computations of the angular correlation in the laboratory coordinate system, assuming independent random emission of fragments and light particles. The agreement is sufficiently good to

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ACCESSION NO: AP4013022

justify the conclusion that a purely random angular distribution is observed for both slow and fast fragments (measured in terms of track length, R: $15\mu \leq R < 80\mu$ and $R \geq 80\mu$ respectively). From the observations it is deduced that, in the process of fragmentation of Ag and Br nuclei, protons and alpha-particles are emitted in the fragmentation process rather than being produced later from the decay of excited fragments. Hence, it is further concluded that relatively stable fragments with $z = 4$-9 are formed with large probability in the splitting of Ag and Br nuclei. Orig. art. has: 5 diagrams and 1 table.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics AN UzSSR)

SUBMITTED: 07Aug63 DATE ACQ: 03Mar64 ENCL: 00

SUB CODE: NS NO REF SOV: 011 OTHER: 005

Card 2/2

AZIMOV, S.A.; ARUSHANOV, G.G.; YULDASHEV, A.A.

Behavior of the real and imaginary parts of the elastic pp-scattering amplitude at high energies. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 7 no.3:21-22 '63. (MIRA 16:8)

1. Institut yadernoy fiziki AN UzSSR.

AZIMOV, S.A.; KARIMOVA, R.; LOZHKIN, O.V.

Angular correlations of fragments and light particles in nuclear fission. Izv. AN Uz. SSR. Ser.fiz.-mat.nauk 7 no. 6:35-39 '63. (MIRA 17:6)

1. Institut yadernoy fiziki AN UzSSR.

ABDUZHAMILOV, Sh.; AZIMOV, S.A.; CHERNOVA, L.P.; CHERNOV, G.M.; CHUDAKOV, V.M.

Azimuthal angular distribution of shower particles producted by cosmic ray particles in a photographic emulsion. Zhur. eksp. i teor. fiz. 45 no.3:407-414 S '63. (MIRA 16:10)

1. Institut yadernoy fiziki AN Uzbekskoy SSR.
(Photography, Particle track)
(Cosmic rays)

L 40707-65 EWG(j)/EWT(m)/FCC/T IJP(c)

ACCESSION NR: AP5012316 UR/0048/64/028/011/1773/1775

AUTHOR: Azimov, S. A.; Abdullayev, A. M.; Lugovskoy, V. B.; Myalkovskiy, V. M.; Tokarskiy, V. B.; Yuldashbayev, T. S. 28 27 8

TITLE: Inelasticity of the interaction of cosmic particles with light and heavy nuclei / Report of All-Union Meeting on Cosmic Rays Physics, held in Moscow from October 4 to 10, 1963 /

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 28, no. 11, 1964, 1773-1775

TOPIC TAGS: cosmic ray, particle interaction, nucleus, nuclear particle

ABSTRACT: The relationship between the coefficient of inelasticity and primary energy was studied in the interval from 70 to 700 Bev using the calorimeter of a Cerenkov counter. Measurements were made at the mountain station of the Institute of Nuclear Physics of the Uzbek SSR Academy of Sciences in Kum-Bel' pass at an altitude of 3200 meters above sea level. The coefficient was found to be only slightly dependent on the energy of the incident particles in this energy interval. Values of the coefficient are given for iron and carbon. Orig. art. has: 1 figure, 2 formulas, and 1 graph.

Card 1/2

L 40707-65

ACCESSION NR: AP5012316

ASSOCIATION: Institut yadernoy fiziki Akademii nauk UzSSR (Institute of Nuclear Physics, Academy of Sciences, UzSSR)

SUBMITTED: 00	ENCL: 00	SUB CODE: AA, NP
NO REF SOV: 002	OTHER: 001	JPRS

Card 2/2 nb

L 07701-65

UR ... /0028/011/1776/1777

AUTHOR: Azimov, S. A.; Polyak, Yu. V.; Abdullayev, R. S.

TITLE: Amount of energy transmitted to the soft component by particles interacting with carbon nuclei /Report ...

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 28, no. 11, 1964, 1776-1777

TOPIC TAGS: particle interaction, nucleus, nuclear particle, nuclear energy, hodoscope, ion chamber

ABSTRACT: Measurements were conducted at the mountain station of the Uzbek Academy of Sciences. The station is 3170 meters above sea level. The apparatus was operated for 600 hours. It consisted of 11 series of ionization chambers (150 in all) and three series of hodoscope counters (240 in all) ... were recorded. The average ... energy transfer to the ... component was determined ...

Orig. art. has: 1 figure and 1 graph.

Card 1/2

L 40 [illegible]-65

ACCESSION NR: AP5012517

ASSOCIATION: Institut yadernoy fiziki Akademii nauk UzSSR (Institute of Nuclear Physics, Academy of Sciences UzSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: NP

NO REF SOV: 000 OTHER: 000 JPRS

Card 2/2 pb

ACCESSION NR: AP4042364 S/0056/64/047/001/0024/0029

AUTHORS: Abduzhamilov, Sh.; Azimov, S. A.; Chernova, L. P.; Chernov, G. M.; Chudakov, V. M.

TITLE: Angular distributions of secondary particles in pN collisions at 24 BeV energy

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 1, 1964, 24-29

TOPIC TAGS: pion scattering, angular distribution, nucleon scattering, dispersion analysis, nuclear emulsion

ABSTRACT: The research was undertaken because asymmetric emission of particles was observed in nucleon-nucleon collisions at energies of several hundred BeV (V. V. Guseva et al., Izv. AN SSSR, Ser. fiz., v. 26, 549, 1962. N. A. Dobrotin et al., Nuclear physics v. 35, 152, 1962). The statistical method of dispersion analysis (the F test) is used to check the hypothesis of independent secondary-particle

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emission angles in inelastic pN interactions involving primary protons of equal energy E and equal numbers n of charged secondary particles. The experimental values of F for pN interactions at 24 BeV and for 4--9 charged secondary particles conflict with this hypothesis and indicate nonuniformity of the angular distributions in the laboratory system. This nonuniformity cannot be accounted for by momentum conservation in knock-on collisions and is associated with the particle production mechanism in peripheral interactions. The efficiency of the F-test for determining nonuniform angular distribution in the laboratory system was checked by investigating the random stars obtained from a somewhat different model of NN interactions at 300 BeV, by obtaining the spectrum of meson cloud velocities in the center of mass system and the secondary-particle energy spectrum in the rest system of the meson cloud. An accelerated on-track scanning of plates bombarded with 24-BeV protons in the CERN accelerator has shown that for the stars observed in the emulsion the most values of F exceed unity, meaning that the emission angles of the secondary particles are not independent at least for some

ACCESSION NR: AP4042364

values of n. The nonuniformity of the angular distributions is similar to the asymmetric c.m.s. particle emission observed in NN collisions at ~10^{11} eV. The peripheral interactions at E-24 BeV remains dominant up to a multiplicity n = 9. "The authors are grateful to W. O. Lock for collaborating in the acquisition of the photographic plates exposed in the CERN accelerator." Orig. art. has: 2 figures and 19 formulas.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk Uzbekskoy SSR (Institute of Nuclear Physics, Academy of Sciences, Uzbek SSR)

SUBMITTED: 23Jan64 ENCL: 00

SUB CODE: NP NR REF SOV: 003 OTHER: 001

3/3

ACCESSION NR: AP4038420 S/0166/64/000/002/0050/0055

AUTHOR: Azimov, S. A.; Gorichev, P. A.; Karimova, R.; Lozhkin, O. V.

TITLE: Angular correlations of fragments and light particles with residual nuclei

SOURCE: AN UzSSR. Izv. Seriya fiziko-matematicheskikh nauk, no. 2, 1964, 50-55

TOPIC TAGS: fragmentation, light particle, residual nuclei, heavy fragment, proton, alpha particle, neutron, nuclear cascade, nucleon

ABSTRACT: The problem of associating large numbers of nucleons into comparatively stable substructures in heavy nuclei aroused interest in the mechanism of fragmentation. The main purpose was to find more precise data for the calculation of angular correlations and to obtain additional experimental facts with respect to the angular correlation of fragments in which $Z \geq 4$, α-particles and protons containing residual nuclei. By using P-9 ch type of nuclear emulsion, the authors were able to measure the characteristics of recoil nuclei in great detail. The mean sensitivity of this emulsion is $E_{pmax} \approx 40$ MeV. The emulsion was bombarded with 660 MeV protons using the phasotrone at the laboratory of nuclear problems OIYaI. The authors concluded that the fact that angular correlation of protons and α-particles with residual

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ACCESSION NR: AP4038420

nuclei does not depend on the number of fragments in spallation, corresponds to the assertion that these particles are ejected by a nucleus which has already ejected fragments. Therefore, a spallation in which the ejection of a fragment precedes the evaporation of light particles, is most probable. The fragmentation cross-section increases sharply during a transition to protons with an energy of several hecto-electron volts, i.e., when the probability of formation of highly excited nuclear conditions increases. Orig. art. has: 5 figures.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics AN UzSSR)

SUBMITTED: 24Aug64 DATE ACQ: 26Jun64 ENCL: 00

SUB CODE: NP NO REF SOV: 007 OTHER: 001

Card 2/2

L 59407-65 EWG(j)/EWT(m)/FCC/T IJP(c)

ACCESSION NR: AR5015974 UR/0058/65/000/005/V046/V047

SOURCE: Ref. zh. Fizika, Abs. 5V350

AUTHORS: Azimov, S. A.; Polyak, Yu. V.; Abdullayev, R. S.

B

TITLE: Investigation of the coefficient of inelasticity in interactions between particles and carbon nuclei

CITED SOURCE: Dokl. AN UzSSR, no. 11, 1964

TOPIC TAGS: inelasticity coefficient, cosmic ray particle, carbon nucleus, nuclear interaction, electron nuclear shower, nuclear active particle, ionization calorimeter

TRANSLATION: The authors determine the coefficient of inelasticity (K) in an interaction between fast cosmic-ray particles and carbon nuclei. The measurement of K is based on the variation with depth of the energy of the electron-nuclear shower which develops in a thick block of matter. The measuring apparatus constitutes an ionization calorimeter, consisting of rows of ionization chambers interleaved with graphite filters. The hodoscopic counters and ionization chambers of the first row

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L 59407-65

ACCESSION NR: AR5015974

select the events in which a single nuclear-active particle passes through the apparatus. The ionization chambers of the second row and the hodoscopic counters of the third row register the active interaction in the first layer, while the remaining rows of the ionization chambers measure the distribution of the ionization in the apparatus. The total thickness of graphite in the apparatus is ~ 5 nuclear interaction ranges. The installation registered events in which the ionization released in the substance correspond to an electron-nuclear shower energy $E_0 > 30$ BeV. Some 70 interactions between a single nuclear-active particle with energy larger than 100 BeV were selected for the analysis. For each interaction there was constructed the distribution of the ionization in the substance, after which the individual distributions were reduced to a single energy and averaged. From the averaged distribution one determines the dependence of the energy release in the substance on the depth of the absorber. The experimental curves were compared with the theoretical ones calculated for different values of K. The data obtained indicate that the average value of the inelasticity coefficient is K = 0.5--0.7. Ya. M.

SUB CODE: NP ENCL: 00

Card 2/2

L 59406-65 EWA(h)/EWT(1)/EWT(m) Peb DIAAP

ACCESSION NR: AR5015970 UR/0058/65/000/005/A027/A027

SOURCE: Ref. zh. Fizika, Abs. 5A235

AUTHORS: Azimov, S. A.; Polyak, Yu. V.; Abdullayev, R. S. 12/ B

TITLE: Pulse-height analyzer for the registration of rare events 25

CITED SOURCE: Dokl. AN UzSSR, no. 12, 1964, 13-15

TOPIC TAGS: pulse height analyzer, 19 Geiger Mueller counter, ionization chamber, nuclear interaction, cosmic ray particle

TRANSLATION: A description is presented of a pulse-height analyzer intended for simultaneous registration of pulses of a large number of ionization chambers and G. M. counters. The analyzer consists of individual amplification channels and channels for the transformation of the pulses obtained from the corresponding ionization chambers, as well as common control and registration circuits. Each channel of the analyzer is assembled in the form of an individual block, mounted on a common rack by means of a connection plug. The registration is effected by photo-

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L 59106-65

ACCESSION NR: AR5015970 O

graphing the glowing neon lamps on moving motion picture film. The time of glow of each neon lamp depends on the ionization in the corresponding ionization chamber. The installation operates only in those cases when the total ionization in the chambers exceeds a specified value. The process of registration lasts 6 seconds and is effected by means of a relay circuit in the control block. A block diagram of the analyzer and a schematic diagram of an individual channel are given. The described analyzer was used in experiments on the nuclear interactions between cosmic-ray particles of high and ultrahigh energy. L. S.

SUB CODE: NP ENCL: 00

Card 2/2

L 23759-65 EWT(m)/T

ACC NR: AP6014608 SOURCE CODE: UR/0367/65/001/001/0072/0075

AUTHOR: Azimov, S. A.; Beter, Ye. V.--Beter, E. V.; Gulyamov, U. G.

ORG: none

TITLE: Upper limit of cross section for coherent interactions of fast pi-mesons with heavy nuclei of an emulsion

SOURCE: Yadernaya fizika, v. 1, no. 1, 1965, 72-75

TOPIC TAGS: pi meson, nuclear emulsion, pion, particle interaction, particle cross section

ABSTRACT: A method is proposed for selecting instances of coherent production of two pions on a nucleus by a high-energy pion. The method is based on information obtained from angular measurements only. The upper limit of the cross section is evaluated for the process on heavy nuclei of a photoemulsion with the momentum of the primary pions as 17.2 BEV/c. Orig. art. has: 1 figure and 10 formulas. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 20 / SUBM DATE: 25Jun64 / OTH REF: 003

Card 1/1 UDC

L 23737-66 EWT(m)/T

ACC NR: AP6014820 SOURCE CODE: UR/0367/65/001/004/0676/0680

AUTHOR: Azimov, S. A.; Bannik, B. P.; Vishki, T.; Seb, Do In; Gulyamov, U. G.; Rakhimbayev, B. G.; Chernova, L. I.

ORG: [Azimov, Gulyamov, Rakhimbayev, Chernova] Institute of Nuclear Physics, AN UzbSSR (Institut yadernoy fiziki AN UzbSSR); Joint Institute of Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)

TITLE: Inelastic pp-interactions with low momentum transfer

SOURCE: Yadernaya fizika, v. 1, no. 4, 1965, 676-680

TOPIC TAGS: inelastic interaction, nuclear emulsion, proton, isobar

ABSTRACT: The nuclear emulsion method is used to study inelastic pp--interactions for energies of 2.26 and 9 GEV of a primary proton. The search for events in the emulsion was performed by accelerated inspection of traces. Energy distributions were obtained for slow protons. The events selected are of two types: pp-interactions and a small number of interactions connected with secondary processes in the nucleus. For the energy distribution all cases were taken with their weights K = 1/W, where W is the probability of registration. Both distributions were normalized for the complete observed path of primary protons R = 3694m. In the processing of the experimental data the relative output of the reaction was evaluated qualitatively with the formation of one or two isobars. The authors thank Van Shu-fen', T. Vishki, I. M. Gramenitskiy, V. G. Grishin, N. Dalkhazbav, R. M., Lebedev, A. A. Nomofilov, M. I. Podgoretskiy,

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V. N. Strel'tsov for providing us the materials, which were so useful in this work. The authors also thank I. M. Gramenitskiy for his interest and assistance in the work; M. I. Podgoretskiy for the discussions; and E. G. Bubelev, A. Yuldashev, V. N. Strel'tsov, Yu. A. Troyan and V. G. Grishin for participating in the discussions and for their remarks. The authors offer further thanks to the laboratory workers of IYaF, AN UzbSSR and LVE OIYaI for carrying-out the review of photoemulsions and measurements; and A. T. Balandikov for help in carrying-out the calculations. Orig. art. has: 4 figures. [JPRS]

SUB CODE: 20 / SUBM DATE: 01Jul64 / ORIG REF: 006 / OTH REF: 001

AZIMOV, S.A.; PROZOROVA, Ye.I.; YULDASHEV, A.A.

Elastic scattering of 5.5 Bev./c π^--mesons on protons. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 9 no.2:92-93 '65. (MIRA 18:6)

1. Institut yadernoy fiziki AN UzSSR.

ACCESSION NR: AP4013023 S/0166/63/000/006/0040/0045

AUTHORS: Azimov, S. A.; Gorichev, P. A.; Karimova, R.

TITLE: Multiple production of fragments at incident proton energies of 660 Mev

SOURCE: AN UzSSR. Izv. Seriya fiziko-matematicheskikh nauk, no. 6, 1963, 40-45

TOPIC TAGS: proton, fragment production, neutron energy, phasotron, solid angle distribution, angular correlation, alpha particle

ABSTRACT: A study has been made to verify the hypothesis concerning the simultaneous incidence of two slow (Group I) and noncoincident slow and fast fragments (Group II) in a single split at 660 Mev incident proton energies. The angular correlations between two fragments on the incident neutron energies were also determined. A P-9ch emulsified lamina was irradiated by the exit beam of phasotron OIYaI protons at 660 Mev energies. The characteristics of 184 splits with double fragments and 17 with triples are tabulated. The cosine of the solid angle distribution between two fragments for group I and group II is represented graphically. In group II no intermediate dispersion angle exists for the two fragments. For group II $N_\varphi = 2$, the slow and fast fragment pair has an angular distribution similar to that of a single fragment. No change is observed in the angular

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ACCESSION NR: AP4013023

correlation with change in the incident proton energy. Figure 1 (see Enclosure) shows the angular distribution between fragment track projections and the residual nucleus for N_φ = 1; group I, N_φ = 2; and group II, N_φ = 2. Also included are the energy spectra of the α-particles in the split for 0, 1, and 2 fragment production. The results show that simultaneous ejection of two or three fragments is entirely probable. Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics, AN UzSSR)

SUBMITTED: 07Aug63 DATE ACQ: 03Mar64 ENCL: 01

SUB CODE: GP NO REF SOV: 006 OTHER: 001

Card 2/3

ABDUZHAMILOV, Sh.; AZIMOV, S.A.; CHERNOVA, L.P.; CHERNOV, G.M.; CHUDAKOV, V.M.

Angular distributions of secondary particles in pN-collisions at an energy of 24 Bev. Zhur. eksp. i teor. fiz. 47 no.1:24-29 Jl '64. (MIRA 17:9)

1. Institut yadernoy fiziki AN Uzbekskoy SSR.

ARIPOV, S.A., akademik; POLYAK, Yu.V.; ABDULLAYEV, K.S.

Studying the inelasticity coefficient in the interaction of particles with carbon nuclei. Dokl. AN Uz. SSR 21 no. 11: 17-19 '64. (MIRA 18:12)

1. Institut yadernoy fiziki AN UzSSR. 2. Akademiya nauk UzSSR (for Aripov). Submitted Sept. 8, 1964.

AZIMOV, S.A.; POLYAK, Yu.V.; ABDULLAYEV, R.S.

Determining the fraction of energy transmitted to the soft component by particles interacting with carbon nuclei. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 9 no.1:38-40 '65. (MIRA 18:6)

1. Institut yadernoy fiziki AN UzSSR.

ACC NR: AP6018115 SOURCE CODE: UR/0166/65/000/004/0059/0062

AUTHOR: Azimov, S. A.; Aripov, R.; Gulyamov, U. G.; Rizayev, Kh. A.

ORG: Nuclear Physics Institute, AN UzSSR (Institut yadernoy fiziki AN UzSSR)

TITLE: Formation of slow pi sup + mesons on interaction between protons of 9-bev energy with photoemulsion nuclei 19

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 4, 1965, 59-62

TOPIC TAGS: pi meson, proton interaction, angular distribution, nuclear emulsion, particle accelerator

ABSTRACT: Previous analyses of the angular and energy distributions of the slow protons emitted as a result of the interaction between 24-beV protons and heavy emulsion nuclei has led to important conclusions concerning the behavior of nuclei in the presence of very high excitation nuclei. An investigation has been made of low-energy and so-called "sub-barrier" pions which will ultimately provide information on the production of new resonance particles. However, the available statistical material is much too limited to allow any conclusions concerning the mechanism of production of such mesons. Hence, the authors investigated certain aspects of the process of the formation of slow mesons, including sub-

L 39968-66

ACC NR: AT6018115 SOURCE CODE: UR/[illegible]/65/000/0072

AUTHOR: Azimov, S. A.; Rasulkulov, M. S.

ORG: Nuclear Physics Institute, AN UzSSR (Institut yadernoy [illegible] AN UzSSR)

TITLE: Azimuthal angular distribution of the slow particles produced by nuclear interactions with heavy emulsion nuclei in the presence of high energies

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 4, 1965, 70-72

TOPIC TAGS: angular distribution, heavy nucleus, particle interaction, nuclear collision

ABSTRACT: The authors present the results of an investigation of the azimuthal angular correlations of slow particles in the showers formed on the interaction between singly charged high-energy cosmic-ray particles and heavy emulsion nuclei ($n_g + n_h \geqslant 15$, $n_s \geqslant 15$) by a method better than that originally employed by the Polish scientists Bogdanowicz and Ciok (Nucl. Phys., 40, 1963, 270) who investigated the distribution of the slow ("gray," n_g, and "black," n_h) particles formed by nuclear interactions with heavy emulsion nuclei in the presence of high energies. The authors divided the slow particles for each shower into "gray" and "black" tracks, calculating for each shower the Lorentz factor of the center-of-mass system as well as the azimuthal correlation of angular distribution of the slow particles β_c. On this basis

Card 1/2

ACC NR AP6018852 SOURCE CODE: UR/0367/65/002/006/1049/1053

AUTHOR: Azimov, S. A.; Botor, Ye. V.; Gulyamov, U. G.; Yeroshkina, N. B.; Lovin, A. Ya.

ORG: Institute of Nuclear Physics, AN UzSSR (Institut yadernoy fiziki AN UzSSR)

TITLE: Coherent inelastic interactions between high-energy pi sup minus mesons and heavy nuclei in photoemulsions [This paper was given at the 14th Annual Conference on Nuclear Spectroscopy, Tbilisi, February 1964]

SOURCE: Yadernaya fizika, v. 2, no. 6, 1965, 1049-1053

TOPIC TAGS: pi meson, heavy nucleus, inelastic interaction, pion, nuclear emulsion

ABSTRACT: The characteristics of interactions assumed to be the coherent inelastic reactions $\pi + A \rightarrow \pi^+ + \pi^- + \pi^- + A'$ on heavy nuclei in a photoemulsion are investigated for 17.2 Gev/c primary pion momenta. The cross-section of this process is found to be 5.4 ± 1.4 mbn. Compared with the corresponding value for carbon, this indicates a dependence of the cross-section on the atomic number of the type $A^{\frac{1}{3}}$ or $A^{\frac{2}{3}}$. Orig. art. has: 5 figures and 8 formulas. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 20 / SUBM DATE: 17Apr65 / ORIG REF: 003 / OTH REF: 012

Card 1/1